What is claimed is:

1. Method for providing flow control for multiple signal streams over a single ETHERNET link, comprising:

receiving PDUs (protocol data units) from multiple streams at a first MAC (media access control) client;

encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs;

transmitting the MAC frames over an ETHERNET link to a second MAC client;

receiving the MAC frames at the second MAC client;

decapsulating each PDU;

forwarding each PDU to a port buffer associated with the stream identified in the MAC frame from which the PDU was decapsulated;

monitoring each buffer for fullness; and

transmitting a PAUSE control frame from the second MAC client to the first MAC client, the PAUSE control frame indicating the fullness condition of each buffer.

2. The method according to claim 1, further comprising:

controlling the flow of signal streams by temporarily halting the transmission of PDUs belonging to streams associated with buffers which are indicated as congested by the PAUSE control frame.

3. The method according to claim 1, wherein:

each MAC frame includes a pre-pended address field which identifies the stream with which the encapsulated PDU is associated.

4. The method according to claim 1, wherein:

the identification is mapped onto an IEEE 802.1Q VLAN (virtual local area network) tag within the MAC frame.

5. The method according to claim 1, wherein:

the identification is an IEEE 802.1Q VLAN (virtual local area network) tag within the MAC frame which is mapped to a port.

6. The method according to claim 1, wherein:

the PAUSE control frame includes a single bit identifier for each buffer for indicating the fullness condition of the associated buffer.

7. The method according to claim 6, wherein:

each single bit identifies an XON/XOFF condition.

8. The method according to claim 1, wherein:

the PAUSE control frame includes a two bit identifier for each buffer for indicating the fullness condition of the associated buffer.

9. The method according to claim 8, wherein:

each two bit identifier identifies an XON/XOFF/NOCHANGE condition.

10. The method according to claim 1, wherein:

the PAUSE control frame includes a PAUSE timer value.

11. The method according to claim 10, wherein:

the PAUSE timer value is set to zero when the PAUSE control frame indicates that no buffer is experiencing congestion.

12. The method according to claim 11, wherein:

the PAUSE timer is set to a pre-programmed Pause Time Value when the PAUSE control frame indicates that at least one buffer is experiencing congestion.

13. The method according to claim 12, further comprising:

setting a pause refresh timer each time a PAUSE control frame is transmitted; and

transmitting a PAUSE control frame at the expiration of the pause refresh timer if no PAUSE control frame was transmitted since the pause refresh timer was set.

14. The method according to claim 13, further comprising:

setting a pause delay timer each time a PAUSE control frame is transmitted; and

transmitting a PAUSE control frame at the expiration of the pause delay timer if congestion conditions have changed since the last PAUSE control frame was transmitted.

15. The method according to claim 14, wherein:

the pause delay timer is of shorter duration than the pause refresh timer.

16. A method for providing flow control for multiple signal streams over a single ETHERNET link, comprising:

receiving MAC frames from a MAC client, each frame containing a PDU and an indication of the stream to which the PDU belongs;

decapsulating the PDUs and storing each PDU in a buffer associated with the stream indicated in the MAC frame;

monitoring the fullness of each buffer; and

transmitting a PAUSE control frame to the MAC client, the PAUSE control frame indicating the fullness condition of each buffer.

17. The method of claim 16, wherein:

the PAUSE control frame includes a single bit identifier for each buffer for indicating the fullness condition of the associated buffer.

18. The method according to claim 17, wherein:

each single bit identifies an XON/XOFF condition.

19. The method according to claim 16, wherein:

the PAUSE control frame includes a two bit identifier for each buffer for indicating the fullness condition of the associated buffer.

20. The method according to claim 19, wherein:

each two bit identifier identifies an XON/XOFF/NOCHANGE condition.

21. The method according to claim 16, wherein:

the PAUSE control frame includes a PAUSE timer value.

22. The method according to claim 21, wherein:

the PAUSE timer value is set to zero when the PAUSE control frame indicates that no buffer is experiencing congestion.

23. The method according to claim 22, wherein:

the PAUSE timer is set to a pre-programmed Pause Time Value when the PAUSE control frame indicates that at least one buffer is experiencing congestion.

24. The method according to claim 23, further comprising:

setting a pause refresh timer each time a PAUSE control frame is transmitted; and

transmitting a PAUSE control frame at the expiration of the pause refresh timer if no PAUSE control frame was transmitted since the pause refresh timer was set.

25. The method according to claim 24, further comprising:

setting a pause delay timer each time a PAUSE control frame is transmitted; and

transmitting a PAUSE control frame at the expiration of the pause delay timer if congestion conditions have changed since the last PAUSE control frame was transmitted.

26. The method according to claim 25, wherein:

the pause delay timer is of shorter duration than the pause refresh timer.

27. An apparatus for providing flow control for multiple signal streams over a single ETHERNET link, comprising:

a first MAC (media access control) client; and

a second MAC client coupled to said first MAC client by the ETHERNET link,

said first MAC client having

means for receiving PDUs (protocol data units) from multiple streams,

means for encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs,

means for transmitting the MAC frames over the ETHERNET link to said second MAC client,

said second MAC client having

means for receiving the MAC frames transmitted by said first MAC client,

means for decapsulating each PDU,

means for forwarding each PDU to a port buffer associated with the stream identified in the MAC frame from which the PDU was decapsulated,

means for monitoring each buffer for fullness, and

means for transmitting a PAUSE control frame to said first MAC client, the PAUSE control frame indicating the fullness condition of each buffer.

28. The apparatus according to claim 27, further comprising:

means for controlling the flow of said multiple signal streams in response to said PAUSE control frame, including means for temporarily halting the transmission of PDUs belonging to streams associated with buffers indicated as congested by said PAUSE control frame.

29. The apparatus according to claim 27, wherein:

each MAC frame includes a pre-pended address field which identifies the stream with which the encapsulated PDU is associated.

30. The apparatus according to claim 27, wherein:

the identification is mapped onto an IEEE 802.1Q VLAN (virtual local area network) tag within the MAC frame.

31. The apparatus according to claim 27, wherein:

the identification is an IEEE 802.1Q VLAN (virtual local area network) tag within the MAC frame which is mapped to a port.

32. The apparatus according to claim 27, wherein:

the PAUSE control frame includes a single bit identifier for each buffer for indicating the fullness condition of the associated buffer.

33. The apparatus according to claim 32, wherein:

each single bit identifies an XON/XOFF condition.

34. The apparatus according to claim 31, wherein:

the PAUSE control frame includes a two bit identifier for each buffer for indicating the fullness condition of the associated buffer.

35. The apparatus according to claim 34, wherein:

each two bit identifier identifies an XON/XOFF/NOCHANGE condition.

36. The apparatus according to claim 31, wherein:

the PAUSE control frame includes a PAUSE timer value.

37. The apparatus according to claim 36, wherein:

the PAUSE timer value is set to zero when the PAUSE control frame indicates that no buffer is experiencing congestion.

38. The apparatus according to claim 37, wherein:

the PAUSE timer is set to a pre-programmed Pause Time Value when the PAUSE control frame indicates that at least one buffer is experiencing congestion.

39. The apparatus according to claim 38, wherein:

said second MAC client includes means for setting a pause refresh timer each time a PAUSE control frame is transmitted,

a PAUSE control frame being transmitted at the expiration of the pause refresh timer if no PAUSE control frame was transmitted since the pause refresh timer was set.

40. The apparatus according to claim 38, wherein:

said second MAC client includes means for setting a pause delay timer each time a PAUSE control frame is transmitted,

a PAUSE control frame being transmitted at the expiration of the pause delay timer if congestion conditions have changed since the last PAUSE control frame was transmitted.

41. The apparatus according to claim 40, wherein:

the pause delay timer is of shorter duration than the pause refresh timer.

42. An apparatus for providing flow control for multiple signal streams over a single ETHERNET link, comprising:

means for receiving MAC frames from a MAC client over the ETHERNET link, each frame containing a PDU and an indication of the stream to which the PDU belongs;

a plurality of buffers, one buffer associated with each stream;

means for decapsulating the PDUs and storing each PDU in a buffer associated with the stream indicated in the MAC frame;

means for monitoring the fullness of each buffer; and

means for transmitting a PAUSE control frame to the MAC client, the PAUSE control frame indicating the fullness condition of each buffer.

43. The apparatus according to claim 42, wherein:

the PAUSE control frame includes a single bit identifier for each buffer for indicating the fullness condition of the associated buffer.

44. The apparatus according to claim 43, wherein:

each single bit identifies an XON/XOFF condition.

45. The apparatus according to claim 42, wherein:

the PAUSE control frame includes a two bit identifier for each buffer for indicating the fullness condition of the associated buffer.

46. The apparatus according to claim 45, wherein:

each two bit identifier identifies an XON/XOFF/NOCHANGE condition.

47. The apparatus according to claim 42, wherein:

the PAUSE control frame includes a PAUSE timer value.

48. The apparatus according to claim 47, wherein:

the PAUSE timer value is set to zero when the PAUSE control frame indicates that no buffer is experiencing congestion.

49. The apparatus according to claim 48, wherein:

the PAUSE timer is set to a pre-programmed Pause Time Value when the PAUSE control frame indicates that at least one buffer is experiencing congestion.

50. The apparatus according to claim 49, further comprising:

a pause refresh timer; and

means for resetting the pause refresh timer each time a PAUSE control frame is transmitted, wherein

a PAUSE control frame is transmitted at the expiration of the pause refresh timer if no PAUSE control frame was transmitted since the pause refresh timer was set.

51. The apparatus according to claim 50, further comprising:

a pause delay timer; and

means for resetting the pause delay timer each time a PAUSE control frame is transmitted, wherein

a PAUSE control frame is transmitted at the expiration of the pause delay timer if congestion conditions have changed since the last PAUSE control frame was transmitted.

52. The apparatus according to claim 51, wherein:

the pause delay timer is of shorter duration than the pause refresh timer.

53. An apparatus for providing flow control for multiple signal streams over a single ETHERNET link, comprising:

a first MAC (media access control) client; and

a second MAC client coupled to said first MAC client by the ETHERNET link,

said first MAC client having

at least one buffer coupled to a source of PDUs (protocol data units) from multiple streams,

an addressing and scheduling module coupled to said at least one buffer, said addressing and scheduling module encapsulating each PDU in a MAC frame which includes an identification of the stream to which the PDU belongs,

a MAC transmitter coupled to said addressing and scheduling block and to the ETHERNET link, said MAC transmitter transmitting the MAC frames over the ETHERNET link to said second MAC client,

said second MAC client having

a MAC receiver coupled to said ETHERNET link, said MAC receiver receiving the MAC frames transmitted by said first MAC client,

a receive addressing module coupled to said MAC receiver, said receive addressing module decapsulating each PDU,

a plurality of port buffers coupled to said receive addressing module, each port buffer being associated with the stream identified in the MAC frame from which the PDU was decapsulated,

a congestion monitor coupled to said port buffers, said congestion monitor monitoring each buffer for fullness, and

a downstream MAC transmitter coupled to said congestion monitor, said downstream MAC transmitter transmitting a PAUSE control frame to said first MAC client, the PAUSE control frame indicating the fullness condition of each buffer.

54. The apparatus according to claim 53, wherein:

said first MAC client a downstream MAC receiver coupled to the ETHERNET link and said addressing and scheduling module, whereby transmission of PDUs belonging to a stream associated with a buffer indicated as congested by the PAUSE control frame is temporarily halted.

55. An apparatus for providing flow control for multiple signal streams from a MAC client over a single ETHERNET link, comprising:

a MAC receiver coupled to the ETHERNET link, said MAC eceiver receiving MAC frames from the MAC client over the ETHERNET link, each frame containing a PDU and an indication of the stream to which the PDU belongs;

a plurality of buffers, one buffer associated with each stream;

a receive addressing module coupled to said MAC receiver and to said buffers, said receive addressing module decapsulating the PDUs and storing each PDU in a buffer associated with the stream indicated in the MAC

frame;

a congestion monitor coupled to said buffers, said congestion monitor monitoring the fullness of each buffer; and

a MAC transmitter coupled to said congestion monitor, said MAC transmitter transmitting a PAUSE control frame to the MAC client, the PAUSE control frame indicating the fullness condition of each buffer.